

Abstraction

A IP based distributed virtual SAN for providing distributed storage volumes in the block data form to multiple client hosts, includes one or more IP SAN units, distribution control management station and network infrastructure, each IP SAN units provides storage volumes to one or more client hosts; The network infrastructure including switches/routers and DNS an others connect client hosts to the distributed virtual SAN and provide a communication and data link between them. The distribution control management station accepts storage requests from client hosts, identifies the appropriate IP SAN units, assign appropriate storage volumes to client hosts, and allow the client hosts to establish a data link directly to the granted IP SAN units for storage accessing. To automatically configure the distributed virtual SAN in a cross network environment, a "Distributed Virtual SAN Configuration Protocol" is defined and used in this invention together with existing DNS. This automatic configuration method allows this distributed virtual SAN to be a true scalable virtual storage system, which not only work in a LAN environment but also in a cross network domain environment. Further it can meet the requirement of storage on demanding and dynamic storage system capacity expanding. In addition, the principle of automatic configuration for scalable distributed virtual SAN can also be applied to other virtual server system to let them become scalable virtual server in a cross network domain environment. Finally, the methods presented in this invention for IP based SAN can also apply to all other protocol based SAN.